DOCUMENT RESUME

ED 329 352 PS 019 457

AUTHOR Scheffelin, Margaret; Ballard, Tara
TITLE Report on the Kindergarten Testing Program: The Effectiveness and Feasibility of a Kindergarten Testing Program Developed by a Pilot Project. A Report to the California Legislature as Required by Education Code Section 49583.
INSTITUTION California State Dept. of Education, Sacramento. Office of Program Evaluation and Research.
REPORT NO TAC-B-119
PUB DATE 89
NOTE 45p.
PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS Feasibility Studies; *Identification; *Kindergarten Children; Pilot Projects; Primary Education; Program Development; Program Effectiveness; *Reading Difficulties; *Screening Tests; State Programs; *Student Evaluation
IDENTIFIERS *California

ABSTRACT

This legislative report presents the results of a pilot project conducted in eight suburban California school districts as part of an effort to develop a testing program identifying kindergartners with potential reading problems. The project was also intended to evaluate the program's effectiveness and gauge the feasibility of statewide implementation in light of the criteria of effectiveness, statewide utility, and cost. Five major findings indicated that: (1) a small number of kindergartners with potential reading problems was identified by teacher judgment instrument and screening tests; (2) the program was partially effective in correctly identifying kindergarten children with potential reading problems; (3) no single indicator of potential reading problems met the criterion of 75 percent correct identifications, regardless of the posttest measure used; (4) among single indicators, the kindergarten teacher judgment indicator, with the standardized test of reading achievement used as the posttest measure, came closest to meeting the criterion of 75 percent correct identifications; and (5) when the cutoff point on a commercial screening instrument was raised, the percentage of correct identifications decreased. It was concluded that the program was not effective, not advisable for statewide testing, and prohibitively expensive. (RH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

TAC-B-114

PS

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

X This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Report on the Kindergarten Testing Program

ED329352

PS 019457

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

Calif. State Dept. of Education

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CALIFORNIA STATE DEPARTMENT OF EDUCATION
Program Evaluation and Research Division
Sacramento, 1989

BEST COPY AVAILABLE

Report on the Kindergarten Testing Program

The Effectiveness and Feasibility of a Kindergarten Testing Program Developed by a Pilot Project

A Report
to the California Legislature as Required
by Education Code Section 49583

Prepared by

Margaret Scheffelin, Consultant
Tara Ballard, Research Analyst
Program Evaluation and Research Division

Publishing Information

This report was prepared by Margaret Scheffelin, Consultant and Tera Ballard, Research Analyst, Program Evaluation and Research Division, California State Department of Education. The report, which was prepared under the direction of Carolyn Fowle, Assistant Director, Program Evaluation and Research Division, was published by the Department, 721 Capitol Mall, Sacramento, California (mailing address: P.O. Box 944272, Sacramento, CA 94244-2720). Any questions regarding this report should be addressed to the Program Evaluation and Research Division; telephone 916-322-5010. This report was distributed under provisions of the Library Distribution Act and Government Code Section 11096.

1989

Table of Contents

List of Tables ii

Foreword iii

EXECUTIVE SUMMARY iv

I. Introduction to the Pilot Project 1

II. The Kindergarten Testing Program 6

III. The Effectiveness Study 11

IV. Feasibility of Implementing the Kindergarten Testing Program Statewide 20

Appendices

A. Chapter 1376, Statutes 1985 (Assembly Bill 972) 23

B. List of Field Experts 24

C. List of Selected References 25

D. Selected Descriptive Statistics 27

List of Tables

Table 1. Effectiveness of the Kindergarten Testing Program in Correctly Identifying Children as Having Potential Reading Problems (Multiple Pre-Test Indicators) 16

Table 2. Effectiveness of the Kindergarten Testing Program in Correctly Identifying Children as Having Potential Reading Problems (Single Pre-Test Indicators) 18

Table 3. Estimated Costs of Implementing the Kindergarten Testing Program Statewide 21

Foreword

Over the past four years a number of educational leaders and practitioners in California and 20 states as well as Canada have graciously cooperated in the development of this pilot project and in carrying out the numerous data collection efforts involved. In addition to the continuing efforts of the project coordinators and staff in the eight original districts, the project has received assistance from members of the advisory group of field experts and from school principals and teachers in over 300 schools in which project children were enrolled in the spring 1988.

Project staff in the Program Evaluation and Research Division have included: Tara Ballard, Terra Lee Black, Tammy Cabral, Mark Fetler, Sherry Gonzalez, Amy Houston, Roxanne Moger, Maura Reagan, Maureen Rolfs, Margaret Scheffelin, Carol Smith, and Miriam Torres.

Special appreciation is expressed to Professor James Catterall of the Graduate School of Education of the University of California, Los Angeles, for his independent review and critique of the draft of this report.

Interest in helping children in learning to read has been shown in a number of ways during this pilot project. School districts responded to Assemblyman Bill Bradley's invitation to participate as volunteers in the pilot project. The willingness of parents to permit their children to participate in the pilot project is evidence of their concerns for all children to succeed in learning to read. The willingness of school personnel to continue to collect and submit data on their students is a tribute to their interest in the topic and their abiding concern for assisting children who have severe reading problems.

William Padia
Division Director

Carolyn Fowle
Project Director

Program Evaluation and Research Division

EXECUTIVE SUMMARY

This legislative report presents the results of a pilot project conducted by the Department of Education under Chapter 1376, Stats. 85, (Assembly Bill 972, Bradley, see Appendix A). Conducted from November, 1985, through December, 1988, the pilot project accomplished its three objectives.

The first objective was to develop and implement a testing program at the kindergarten grade level to identify children with potential reading problems at an early period. The pilot project's testing program was developed with the advice of a group of field experts in the areas of reading and learning problems (see Appendix B). The testing program was designed to use a multiple indicator procedure with two types of screening instruments: teacher judgment and commercially published screening tests. The teacher judgment instrument relied on the daily observations of the child's performance in the teacher's classroom over a sustained period of instruction. The commercially published screening test instruments relied on the child's performance during a particular testing session.

The pilot project's kindergarten testing program was implemented in eight midsized suburban school districts throughout the state, chosen from among volunteers. Within each school district, schools were selected to represent the range of socio-economic factors as defined in the California Assessment Program. Within each school, two kindergarten classes were selected. Within each kindergarten class, the kindergarten teacher selected children for possible participation in the pilot project's kindergarten testing program. Parents gave their permission for their children to participate. In spring, 1986, the multiple indicator procedures of the pilot project's testing program were administered to over one thousand English-speaking children in 48 kindergarten classes in 24 schools. The field costs associated with the implementation of the pilot project's testing program totalled at least $32,810, or about $28 per participating kindergarten pupil. The greater portion of the field costs to the pilot project was associated with the commercial screening instrument indicator of the kindergarten testing program. The teacher judgment indicator was relatively inexpensive. (See Chapter II, page 6.)

The second objective was to examine the effectiveness of the pilot project's kindergarten testing program in correctly identifying children at an early period. The effectiveness study was designed with the advice of the group of field experts as a pre-test -- no prescribed intervention -- post-test study over a two-year period, from spring, 1986, to spring, 1988. The effectiveness study was not designed to examine the nature, extent, or effectiveness of testing programs or screening procedures in current use. The study was designed to avoid

labelling of children, self-fulfilling expectations, and intrusion into the children's educational programs. The children's scores on the multiple indicators of the kindergarten testing program were used as the pre-test portion of the design. The post-test portion of the design was composed of two measures of reading achievement: teacher judgment and a nationally used standardized reading achievement test. The teacher judgment instrument relied on the teacher's daily observations of the child's performance in the classroom over a sustained period of instruction. The standardized reading achievement test instrument relied on the child's performance during a particular testing session.

Intensive efforts were made to keep in touch with the schools in which pilot project children were enrolled or to which the children transferred, so that as many as possible of the children who participated in the spring 1986 data collection effort would be available to participate in the spring 1988 data collection. Schools administered the two post-test measures of reading achievement in the spring of 1988. Over 900 children in more than 300 schools participated fully in the effectiveness study.

For the pilot project's kindergarten testing program to meet the criterion of effectiveness adopted for the study, at least 75% of the children identified by both of the multiple indicators in kindergarten as having potential reading problems had to demonstrate actual reading achievement deficits on both of the measures of reading achievement at the end of the two-year period. The criterion of 75% was adopted on the basis that 50% is a chance level; 75% is 50% greater than chance.

Five major findings emerged from the analyses of the data. First, a small number of kindergarten children was identified by both of the indicators of the pilot project's kindergarten testing program. The small number is reflective of the relatively small number of children identified by their kindergarten teachers as having potential reading problems, as compared with the number of children identified by the commercial screening instruments.

Second, the pilot project's kindergarten testing program was partially effective in having correctly identified children in kindergarten as having potential reading problems. The multiple indicators of the kindergarten testing program (kindergarten teacher judgment and commercial screening instrument) met the criterion of 75% correct identifications only when the children's scores on a standardized test of reading achievement was used as the only post-test measure, as opposed to both standardized test and teacher judgment.

The multiple indicators of the kindergarten testing program did

not meet the criterion of 75% correct identifications when teacher judgment of the children's reading achievement was used as the only post-test measure.

Third, no single indicator of potential reading problems used in the kindergarten testing program met the criterion of 75% correct identifications, regardless of the post-test measure used as evidence of actual reading achievement deficit, the teacher's judgment, or the children's scores on the standardized test of reading achievement.

Fourth, of the single indicators of potential reading problems, the kindergarten teacher judgment indicator came closest to meeting the criterion of 75% correct identifications. The teacher judgment indicator approached the criterion only when the standardized test of reading achievement was used as the post-test measure.

Fifth, raising the cutoff point on the commercial screening instrument indicator of potential reading problems lowered the percentage of correct identifications. In other words, widening the net in kindergarten resulted in a lower percentage of correct identifications by the pilot project's kindergarten testing program. (See Chapter III, page 11.)

The third objective was to draw a conclusion on the feasibility of statewide implementation of the pilot project's kindergarten testing program at the end of the pilot project, based on three criteria: effectiveness, statewide utility, and cost. The department's conclusions are based on the results of the pilot project and are not intended to apply to testing programs and screening procedures in current use.

The pilot project's kindergarten testing program was partially effective in correctly identifying children with potential reading problems at an early period. The commercially published screening tests were not designed for use with the rapidly changing demographic patterns of children enrolled in California public schools. The costs for statewide implementation of the kindergarten testing program are estimated at $10.85 million. In addition to the costs incurred in the pilot project, there would be costs at local and state levels for practical implementation of the kindergarten testing program.

Given the limited effectiveness of the pilot project's kindergarten testing program, the increasing number of limited-English-proficient kindergarten children who would be excluded from the testing program, and the sizeable annual costs, it is not feasible to implement the pilot project's kindergarten testing program statewide.

In view of the relatively greater effectiveness of the

kindergarten teacher judgement indicator of potential reading problems and the relative lower cost for administering the kindergarten teacher judgement procedure, the Department recommends further developmental work to increase the effectiveness of kindergarten teacher judgement as one means of correctly identifying children with potential reading problems. Such developmental work should take in account the wide diversity of children's developmental patterns and the linguistic and cultural diversity of children in California's public schools. (See Chapter IV, page 19.)

Chapter I.
Introduction to the Pilot Project

Purpose of the Report. This legislative report presents the results of a pilot project conducted by the Department of Education as authorized by Chapter 1376, Statutes of 1985 (Assembly Bill 972, Bradley, see Appendix A). The pilot project was designed to accomplish three objectives. First, to develop a testing program to be utilized at the kindergarten grade level to determine which pupils have a potential for developing reading problems. Second, to conduct a study to examine the effectiveness of the testing program. Third, to draw conclusions about the feasibility for implementing the testing program statewide at the end of the pilot project. The pilot project was not designed to examine the nature, extent, or effectiveness of testing programs or screening procedures in current use.

The Department developed the testing program and the effectiveness study in consultation with experts in the areas of learning and reading difficulties. The group of field experts (see Appendix B) was selected to advise the Department on the scope and design of the kindergarten testing program. The question addressed in the effectiveness study conducted by the pilot project was "Did at least 75% of the children identified by the kindergarten testing program as having potential reading problems demonstrate actual reading achievement deficits at the end of a two-year period?" The Department's conclusions on feasibility were based on three criteria: effectiveness, statewide utility, and cost.

This chapter contains a statement of the problem; the background of the problem; and the background and limitations of the pilot project. Subsequent chapters describe the multiple indicator procedure kindergarten testing program developed and implemented by the pilot project in eight midsized suburban school districts; the study of the effectiveness of the pilot project's kindergarten testing program; and the Department's conclusions regarding the feasibility of implementing the testing program statewide at the end of the pilot project.

Statement of the Problem. For many years there has been an interest in identifying children during their kindergarten year for possible referral for intensive assessment and possible diagnosis of dyslexia (severe reading difficulties). A variety of testing programs and screening procedures have been developed and used in these identification efforts. Although the interest in kindergarten testing and screening has been high, little is known about the effectiveness of testing programs and screening measures in identifying young children who will later demonstrate severe reading difficulties.

Background of the Problem. Preparing to learn to read is a pre-academic task for young children. Success in reading is important to parents, teachers, and the children themselves. According to the School Readiness Task Force (California State Department of Education, 1988), research indicates that there are universal sequences of growth and change that occur in children in the first nine years of life. At the same time, each child is unique with an individual pattern of growth as well as personality, learning style, and family background. Enormous variance exists in the timing of individual development that is within the normal range. Developmentally appropriate programs and assessment practices are flexible in their expectations about when and how children will acquire certain competencies. One important competency is learning to read; another important competency is being able to demonstrate reading achievement. It is not surprising that teachers, parents, and school administrators are interested in identifying children who have potential reading problems.

A variety of screening measures to assist in identifying children who may have potential learning problems in important academic areas such as reading have been developed over the years by teachers, researchers, and commercial publishers. These screening measures are sometimes used in testing programs operated by school districts. Often, multiple indicators of potential reading problems are used; in other words, more than one screening measure is used. Testing programs include a number of activities, for example, selection or development of measures; purchase or duplication of testing and scoring materials; selection and training of examiners (and interpreters) to administer the measures; obtaining parent permission to test each child; administration of the tests to children and monitoring of examiner (and interpreter) administration to assure adherence to accepted standards; completion of forms; capturing teacher judgment based on classroom observation; scoring of the children's test booklets; completion of parent judgment forms based on observation at home; interpretation of the children's scores; writing individual reports on the performance of each child; informing, by mail, telephone, or personal conference, each child's parents of the results of the testing of their child; and using the results of the screening as an indicator of "potential reading problem" in order to make decisions on the possible need for further assessment of the children. A key element in district decision-making is the setting of cut-off points for determining individual children's need for further observation ("another look") or intensive assessment.

The terms "screen" and "screening" have been used in many ways to mean a direct, or indirect, measurement of child performance or other characteristics. There are two main types of screening measures: measures relying on teacher judgment, such as observation checklists and rating scales; and measures which

obtain a direct measure of child performance. Teacher judgment measures rely on the teacher's knowledge of the child's performance over a sustained period of time in the classroom and the child's response to instruction. Direct measures of a child's performance, such as in a test, rely on the child's performance on a particular day and testing session. In districts operating kindergartens, screening measures are sometimes administered during the beginning or near the end of the kindergarten year.

To be completely (100%) effective, a screening measure must identify as having potential reading problems only those children who will later demonstrate actual reading problems. The determination of the score for labelling a child as "has a potential reading problem," sometimes called the cut-off point, is an important ingredient of a judgment of "effectiveness" of the screening measure (Glass, 1978; Meehl, 1956; Meehl and Rosen, 1955). The higher the cut-off point adopted for assigning a child to a "potential reading problem" group, the more children will be assigned the label of "has a potential reading problem." Similarly, the lower the cut-off point, the fewer children will be assigned the label of "has a potential reading problem." In practice, the information gained through the administration of a screening measure (or a set of multiple indicators) is used to help decide which children need another look or further assessment.

Educational professionals and parents have been concerned about the progress of all children in the early primary school years. One of those concerns has been about the possible negative effects of incorrectly identifying a child (Goodwin and Driscoll, 1980). Incorrect identification as possibly having "difficulties" results in unnecessary (and costly) referral and assessment procedures, as well as the potential for inaccurate labelling of a child. According to a New York educator, kindergarten screening tests are used almost universally in his state and set expectations for students before they enter school (or first grade). Despite the fact that the younger the students are, the less reliable their test results, great credence is given to these tests (Kelly, 1988). A Massachusetts educator recently expressed her concerns about labelling kindergarten children as "at risk" on the basis of a screening test (Martin, 1988).

Another type of incorrect identification is that of identifying a child as not having "difficulties" when they might exist. Therefore, parents and educators have encouraged the development of screening methods which would help them notice children with potential special needs so that educational efforts may be focused on the child's particular strengths and limitations. Screening by its nature, therefore, is the "first stage" in a process designed to identify children with <u>potential</u> difficulties

or talents (in the case of this pilot project, potential reading problems). Experts recommend that screening results be considered only as a "flag" and not, of itself, a final decision about a child. To guard against inaccurate identifications and unnecessary, time-consuming assessments, multiple indicators are often used to gather information about a child from different perspectives, such as teacher judgment and standardized screening tests. Logically, a diagnosis of severe reading difficulties (or dyslexia) would be expected to lead to specialized instruction or other interventions designed to ameliorate the negative effects of the reading difficulties. The authors of a recent national report on learning disabilities called for clarification of the terms used in the field, including dyslexia, and more research to improve the current state of the art in assessment (Learning Disabilities: A Report To The U.S. Congress. Prepared by the Interagency Committee on Learning Disabilities. Washington D.C.: Department of Health and Human Services, 1987).

A search of the educational research literature revealed few studies in which a large number of kindergarten children in a number of schools and school districts were followed over a multiple-year period to examine the relationships among reading achievement deficits and earlier identification of children by screening measures. Previous studies of the relationships between scores on screening measures and subsequent reading achievement deficits have typically been performed with a sample size of 300 or fewer pupils, in only one school or in just a few schools, in one or a few school districts, and over a period of only one school year (Lichtenstein and Ireton, 1984).

No studies were found on the cost-effectiveness of administering screening procedures, such as in reducing the need for later remedial education. No studies were found on the costs or cost-effectiveness of individual assessment for those pupils identified by the screening procedure as "having a potential reading problem" nor the costs of providing needed supplemental instruction to those pupils diagnosed and determined to be in need.

One study was located on the implementation of a statewide mandate for screening new entrants to schools, including kindergarten and first grade students (Screening of Public School Children, 1985). This New York study found substantial compliance with the mandate, difficulties in screening children who spoke a language other than English, a variety of local procedures for setting cutoff scores for identification of children for further assessment, a low rate (1%) of children referred for further assessment as a result of screening, and a wide range of costs reported by school districts. Local costs of purchasing or developing screening instruments, training of examiners and interpreters, administration and scoring of tests, and writing reports based on the test results were partially covered by New

York State's appropriations of more than nine million dollars each year. The proportion of costs devoted to kindergarten screening could not be determined from local fiscal reports.

Background and Limitations of the Pilot Project. The Department conducted the pilot project from November, 1985 through December, 1988. The department's data collection efforts for the pilot project's kindergarten testing program and effectiveness study were supplemented by in-kind contributions of staff time and resources by participating school districts and schools. The Department's pilot project was not intended to describe or examine testing programs and screening procedures in current use.

The multiple indicators of the pilot project's kindergarten testing program were teacher judgment and standardized testing of pupils. The effectiveness study was conducted using a pre-test -- no prescribed intervention -- post-test design. The pre-test data were the kindergarten teacher judgment ratings and the pupils' scores from the commercially published screening test, gleaned from the kindergarten testing performed in the spring of 1986. The post-test data were scores made by the pupils in the spring of 1988 on a standardized test of reading achievement and their teachers' ratings on a project-designed evaluation form.

The legislation directed the Department to report on the results of the pilot project on or before January 1, 1989. The Department's report was to include, but not be limited to, an assessment of the degree to which the early diagnosis of learning disabilities in pupils participating in the pilot project resulted in a reduction of the need for later remedial education for those pupils and the projected cost-effectiveness of this early diagnosis. Regarding the issue of diagnosis of learning disabilities, and the cost-effectiveness of early diagnoses, the resources available to the Department's pilot project were insufficient to conduct the intensive case studies of individual children, including the lengthy assessment and diagnostic procedures necessary to determine the presence or absence of learning disabilities. In addition, the Department determined that prior to assessing the effects of an early diagnosis of learning disabilities, based in part on the results of the testing program developed and implemented by the pilot project, it was important to determine the effectiveness of the testing program.

The next chapter presents a description of the kindergarten testing program developed and implemented by the Department's pilot project.

Chapter II.
The Kindergarten Testing Program

This chapter describes the kindergarten testing program developed and implemented by the pilot project. Separate sections describe the development and the implementation of the testing program, followed by a summary.

Development of the Pilot Project's Kindergarten Testing Program

This section describes the design of the pilot project's kindergarten testing program and the screening instruments used to rate and test the participating kindergarten children. In accordance with the authorizing legislation, an advisory group of experts in the areas of learning and reading difficulties, including neurologists, psychologists, persons working in the these areas in post-secondary educational institutions, teachers, school nurses, education consultants, and school psychologists had been established. Following the advisory group's recommendations, the testing program was designed to include multiple indicators of potential reading problems: kindergarten teacher judgment on an evaluation form and kindergarten pupil performance on a commercially published screening test. Thus for each participating child there would be multiple indications of potential reading problems. To avoid labelling a child, no information was to be given by the pilot project to the schools or teachers about the child's performance (or score) on the commercially published screening test.

Four existing screening instruments were selected for use in each kindergarten classroom participating in the pilot project: a subjective kindergarten teacher evaluation instrument focusing on a child's reading readiness and three commercial screening instruments focusing on a child's direct performance. Each child was to be rated by the kindergarten classroom teacher and be administered one of the three commercial instruments. The primary criteria for selection of the commercially published screening instruments were established reliability and validity. Secondary criteria were brevity, ease of administration, ease of scoring, and reasonable cost. The four instruments are briefly described in the paragraphs below.

The kindergarten teacher evaluation instrument, developed in a research project at the University of California at Los Angeles, sought the impressions of the kindergarten teacher of the children assigned to his or her classroom and requested a rating of each child's functioning in reading readiness and language development (Keogh and Sbordone, 1974). The form is one page, double-sided. The teacher's time required to list and rate each child is approximately five minutes. The rating was scaled from

1 to 5. A rating of 1 indicated that the child was functioning poorly. The rating of 2 meant that the child was slightly below average. The rating of 3 meant that the child was about average. The rating of 4 meant that the child was slightly above average, while a rating of 5 meant the child was doing very well.

The Florida Kindergarten Screening Battery (FLORIDA) is a 20 minute individual screening device. The expanded kit contains the basic kit with 50 record forms plus the Peabody Picture Vocabulary Test - Revised (PPVT-R) and the Beery Visual-Motor Integration (Berry VMI). The FLORIDA yields a score ranging from -3.0 to +3.0. As stated by the authors, the FLORIDA is designed to "... predict the likelihood that an individual kindergarten child will manifest learning problems three years later (end of grade 2)" (Satz & Fletcher, 1982,p.1).

A Scanning Instrument for the Identification of Potential Learning Disability (SEARCH) is a 20 minute individual screening device. The complete kit contains a manual, toys, and record form. The SEARCH yields a score with a range from 1 to 9. The authors have stated that the screening results from the SEARCH may be useful to "... predict learning difficulties in individual children ..." (Silver & Hagin, 1981, p.2).

The Revised Pre-Reading Screening Procedures to Identify First Grade Academic Needs (SLINGERLAND) is a group or an individual screening instrument which takes from 60 to 80 minutes to administer. For group administration an assistant for the examiner is required. For either process of administration, each child's test booklet is scored individually. In this pilot project, the SLINGERLAND was administered in a group setting in 2 or 3 testing periods. The complete set of materials include test record forms, a set of cards, directions for administration, technical manual, and teacher's manual. The SLINGERLAND yields a score ranging from 0 to 130. As stated by the author the SLINGERLAND screening instrument is "... for the purpose of identifying those whose individual performances indicate modality weaknesses that call for specific instruction to prevent early failure." (Slingerland, 1977, p.1).

Implementation of the Pilot Project's Testing Program

This section describes the procedures used by the pilot project to implement the kindergarten testing program. The first subsection describes the procedures used to select the districts, schools, kindergarten classes, and children for participation in the implementation of the kindergarten testing program. The second subsection describes the procedures used by the pilot project and the eight cooperating school districts to administer the screening instruments to the participating children. The third subsection describes the costs to the pilot project of

implementing the kindergarten testing program in 48 kindergarten classes.

Selection of Participants in the Pilot Project. In November 1985, all 916 California school districts maintaining kindergartens were invited by Assemblyman Bill Bradley to apply to the Department for participation in the pilot project of the kindergarten testing program. Of the 56 school districts that volunteered to participate in the pilot project, eight school districts were selected in February 1986. All eight were mid-sized suburban school districts; their enrollments ranged from 9,000 to 20,000 students. Each district operated at least three schools having at least two kindergarten classes. The school districts also represented a range of geographical characteristics from northern, central, and southern California: Alum Rock Union Elementary, Bakersfield City Elementary, Burbank Unified, Cupertino Union Elementary, Escondido Union, Fullerton Elementary, La Mesa-Spring Valley, and Ocean View Elementary.

Each cooperating school district assigned an existing staff member to act as the pilot project coordinator. In collaboration with each district coordinator, three elementary schools were selected to represent a range of socio-economic factors. Within each school, two kindergarten classes were selected at random. The 24 schools selected equally represented low, medium, and high socio-economic areas, as defined by the California Assessment Program (CAP). The teachers of each of the 48 kindergarten classes selected children to participate in the pilot project. The teachers were instructed to complete a project designed class list, excluding children the teacher thought not appropriate for the project, such as having suspected mental retardation, debilitating physical handicap, or inability to speak or understand English. Parents gave permission for their children to participate in the pilot project.

Procedures used to Administer the Screening Instruments to Participating Children. In the spring of 1986, near the end of their kindergarten year, the participating kindergarten children were rated by their teachers and tested by specially hired and trained examiners. The 48 kindergarten teachers rated their children on the kindergarten teacher evaluation form. The school district coordinators forwarded the completed rating forms to the pilot project.

Eight examiners were hired by the pilot project to administer the commercial instruments. The examiners were recommended by members of the group of field experts; were graduate students; were knowledgeable about testing; and had experience in working with young children. Each of the examiners was trained to administer all three instruments in a two-day training session conducted by experts in each of the commercial instruments. After being trained, the examiners administered the three

commercial screening instruments to 1,187 kindergarten children. Within each of the 24 classrooms, children were randomly assigned to one of the three commercial screens. The examiners forwarded the completed test booklets and scoring sheets to the pilot project. No information on the children's performance was provided to the participating districts, schools, or teachers.

At the end of the spring, 1986 implementation period, the pilot project had received a completed kindergarten teacher evaluation form and a completed commercial screening test booklet and scoring sheet for 1,180 out of the 1,187 children. These 1,180 children had participated fully in the kindergarten testing program and were thus classified as participants in the effectiveness study conducted by the pilot project, to be described in the next chapter.

Costs for Implementing the Pilot Project's Multiple Indicator Testing Program. The field activities of the implementation of the testing program had associated costs of at least $32,810. These activities and their costs were:

a. orientation of kindergarten teachers to the pilot project and the testing program and time to complete the kindergarten teacher evaluation form -- $960 for time for 48 teachers for orientation to the testing program [the time needed for the teachers to rate their children is estimated at 98 person-hours (1,180 children at five minutes each)];

b. purchase of commercial testing materials ($1,980, including, for each of the three commercial tests, a kit for each of the eight examiners and test booklets for each of the 1,187 pupils who were administered one of the tests [these costs were offset by contributions by the test publishers]);

c. training the examiners ($2,025 for a three-day training session conducted by three experts, one for each test);

d. examiner participation in training and in administration and scoring of the tests -- $21,440 for 320 days of examiner time [the time needed for the examiners to remove the children from the kindergarten classroom, administer the tests, return the children to their classrooms, and score the test booklets is estimated at 1,187 hours (1,187 children at one hour each)];

e. travel for examiners and travel by the monitor of the administration ($6,400 for nine persons); and

f. duplication of the teacher judgment form ($5.00 to duplicate the form for the 48 kindergarten teachers.)

Because the pilot project was not designed to provide information on the scores made by the children on the commercially published

screening test indicator, there were no costs for interpreting the test results of each child; writing individual reports on each child; or reporting the interpretations to the parents of each child.

Districts contributed the time of existing staff: coordinator, principal, kindergarten teacher, and instructional aide time, as well as local costs for supporting pilot project participation. For example, the parents of each child in the 48 kindergarten classes were mailed a form explaining the pilot project and requesting parental permission for the child to participate. No cost data were collected from the cooperating districts.

Summary

The pilot project's kindergarten testing program was implemented in spring,1986 in 48 kindergarten classes in 24 schools in eight districts. The screening instruments used as the multiple indicators of the kindergarten testing program were administered to 1,180 kindergarten children at a cost to the pilot project of $32,810 or approximately $28 per pupil. The greater portion of the field costs to the pilot project was associated with the commercial screening instrument indicator of the kindergarten testing program. The teacher judgment indicator was relatively inexpensive.

Chapter III.
The Effectiveness Study

The purpose of this chapter is to summarize the study of the effectiveness of the kindergarten testing program developed and implemented by the pilot project. The effectiveness study was conducted by the pilot project from spring 1986 through spring 1988. The purpose of the study was to determine the effectiveness of the pilot project's kindergarten testing program in correctly identifying children at an early period. The question addressed in the effectiveness study was "Did at least 75% of the children identified by the kindergarten testing program as having potential reading problems demonstrate actual reading achievement deficits at the end of a two-year period?" In separate sections this chapter describes the methods and findings of the effectiveness study, followed by a discussion and summary.

Methods

The effectiveness study was designed with the advice of the group of field experts as a pre-test -- no prescribed intervention -- post-test study over a two-year period, from spring,1986 to spring,1988. The effectiveness study was not designed to examine the nature, extent, or effectiveness of testing programs or screening procedures in current use. The study was designed to avoid labelling of children, self-fulfilling expectations, and intrusion into the children's educational programs. The study was not designed to examine the effectiveness of testing programs and screening procedures in current use.

The children's scores on the multiple indicators of the kindergarten testing program were used as the pre-test portion of the design. The teacher judgment instrument and the three commercially published screening tests were described in the previous chapter. The post-test portion of the design was composed of two measures of reading achievement: teacher judgment and a nationally used standardized reading achievement test. The teacher judgment instrument relied on the teacher's daily observations of the child's performance in the classroom over a sustained period of instruction. The standardized reading achievement test instrument relied on the child's performance during a particular testing session.

For purposes of the effectiveness study, several operational definitions were adopted. "Potential reading problems" was defined as scoring below the cutoff point on both of the multiple indicators used in the pilot project's kindergarten testing program and administered in spring 1986. "Reading achievement deficit" was defined as scoring below the cutoff point on one or

both measures of reading achievement administered in spring, 1988. "Effectiveness" was defined as meeting the criterion of having correctly identified at least 75% of project children in kindergarten as having potential reading problems. The criterion of 75% was adopted on the basis that 50% is a chance level; 75% is 50% greater than chance. In other words, for the pilot project's kindergarten testing program to meet the criterion of effectiveness adopted for the study, at least 75% of the children identified by both of the multiple indicators in kindergarten as having potential reading problems had to demonstrate actual reading achievement deficits at the end of the two-year period.

Instrumentation. The two pre-test indicators, kindergarten teacher judgment and commercially published screening tests, had been administered in the kindergarten testing program. A project-designed teacher evaluation form ("Year Three Teacher Evaluation Form," so named for the third year of the pilot project [California State Department of Education, 1988]) and Form U, Level D of the Comprehensive Test of Basic Skills (CTBS) were selected as the post-test measures of reading achievement. The teacher evaluation form measured the study participants' reading achievement level compared to the average pupil in second grade. The form rating was scaled from 1 to 5. A rating of 1 indicated that the child's reading achievement level was extremely poor compared to the average child in second grade. The rating of 2 meant that the child was below average, while a 3 indicated that the child was average. A rating of 4 indicated that the child was above average, and a rating of 5 indicated the child was excellent. The CTBS reading achievement test yields a percentile rank from 1 to 99.

Cutoff Points. Cutoff points were established for the pre-test indicators of potential reading problems and the post-test measures of reading achievement deficit. Cutoff points were adopted as recommended by the technical subcommittee of the group of field experts (see Appendix B). Because of the variety of scores yielded by the four selected screening measures, different types of cutoff points had been established for the commercially published screening tests and the kindergarten teacher evaluation form. For the pre-test indicator of the commercial screen, two cutoff points had been selected, the highest score within the bottom 15% of the scores made by project children in spring 1986 on each commercial screen as one cutoff point for those screens, as well as the highest score within the bottom 25% of the scores. For the pre-test indicator of kindergarten teacher judgment, the lowest rating of 1 had been previously selected.

For the post-test measure, CTBS reading achievement test, the national rank at the 20th percentile was established as the cut-off point. For the "Year Three Teacher Evaluation Form," the lowest rating of 1 was chosen as the cutoff point.

Data Collection. Ratings and scores from the pre-test instruments were gleaned from the files of the pilot project's kindergarten testing program. From spring, 1986 through spring, 1988, intensive efforts were carried on by the schools in which pilot project children were enrolled, so that the pilot project could keep in touch with the schools to which the children transferred. These child tracing efforts were conducted by the pilot project in cooperation with the eight school districts in which the testing program had been implemented during spring, 1986. In addition, the tracing efforts were conducted with a number of other schools to which the children who had participated in the kindergarten testing program transferred during the ensuing two years, through spring, 1988. The purpose of these tracing efforts was to assure that as many children as possible would be available to participate in the spring, 1988 post-test data collection.

In the spring, 1988, post-test data collection support materials were created for local use. These included: a comprehensive set of instructions and log sheets for use by the coordinators in the eight original districts; a comprehensive set of instructions and log sheets for use by principals in schools outside the eight original school districts; the project-designed "Year Three Teacher Evaluation Form"; and supplementary testing instructions to be used with the CTBS, Form U, Level D, Grade 2 reading achievement test. By the end of spring, 1988, schools had administered both of the post-test reading achievement measures to 923 participating children.

Preliminary Data Analysis. Before the pre-test and post-test data from the 923 remaining children were analyzed, the pre-test data were analyzed to determine the effects of attrition (incomplete data and untraceable children) on the population of study participants. Descriptive statistics were calculated on the pre-test instruments (the multiple indicators of potential reading problems) of the 1,180 original study participants and then again on the pre-test instruments for the group of 923 remaining study participants at the end of the two-year period.

Effects of Attrition. At the end of the two and one-half years of student tracing, study students had been enrolled in over 400 schools in 185 school districts in California and in other states. A total of 95 study participants were untraceable during the two years, yielding an attrition rate of 8.1% over the two year period. For analysis, a complete data case contained four elements: 1) a commercial screening score; 2) a kindergarten teacher rating; 3) a CTBS, Form U, Level D Total Reading Achievement percentile rank; and 4) a year three teacher rating. Complete data on study participants were available for 923 study participants, or 78.2% of the original group of study children who had been screened by the kindergarten testing program at the end of kindergarten in the spring of 1986.

Selected descriptive statistics (number of participants tested; and lowest score, highest score, mean score, and standard deviation of the set of pre-test instruments) for those 1,180 study participants screened by both indicators in the spring, 1986 and for the 923 study participants for whom there were complete data in the spring, 1988 can be found in Appendix D. For the FLORIDA it will be noted that the lowest and highest scores exceed the range given in the description of the instrument in the previous chapter. The outlying scores appear to be artifacts of the calculation process required by the test publisher.

The effects of the attrition rate (8.1%) and the incomplete data cases (13.7%) can be seen when comparing the two tables in Appendix D. Each commercial screen kept relatively the same proportion of study participants over the two-year period. The mean score for each commercial screen did not change appreciably. For example, the spring, 1986 mean score on the kindergarten teacher evaluation instrument was 3.26 for the 1,180 original participants and was 3.36 for the 923 participants remaining in the pilot study in spring, 1988. The effects of attrition appeared to be negligible.

Data Analysis. To determine the effectiveness of the pilot project's kindergarten testing program, pre-test and post-test data were analyzed for each child. Cross-tabulations of the pre-test and post-test data were done for each of the 923 children for whom the study had complete data. In summary, for the multiple indicators (kindergarten teacher judgment and commercial screens) the following cross-tabulations were done: kindergarten teacher rating and commercial screen score versus year three teacher rating and CTBS rank; kindergarten teacher rating and commercial screen score versus year three teacher rating; and kindergarten teacher rating and commercial screen score versus CTBS rank. Separate cross-tabulations were performed using the two cutoff points for the commercial screen scores as described earlier.

In addition, cross-tabulations were performed for each of the pre-test single indicators for the 923 children. In summary, for the pre-test and post-test data, the following cross-tabulations were done: kindergarten teacher rating versus year three teacher rating; kindergarten teacher rating versus CTBS rank; commercial screen score using cutoff of the lowest 15% of the scores versus year three teacher rating; commercial screen score using cutoff of the lowest 15% of the scores versus CTBS rank; and commercial screen score using cutoff of the lowest 25% of the scores versus year three teacher rating; commercial screen score using cutoff of the lowest 25% of the scores versus CTBS rank.

Findings

This section contains separate subsections with the findings on the multiple indicators and on the single indicators used in the pilot project's kindergarten testing program.

Findings on Multiple Indicators of the Pilot Project's Kindergarten Testing Program. As displayed in Table 1, the pilot project's kindergarten testing program was partially effective in meeting the 75% criterion.

The Kindergarten Testing Program using both of the indicators was not effective when both post-test measures of reading achievement, teacher rating and standardized test, were used as evidence of reading achievement deficits.

The Kindergarten Testing Program was effective when CTBS standardized test was used alone as evidence of reading achievement deficits.

The Kindergarten Testing Program was not effective when teacher rating at the end of the two year period was used alone or in combination with the CTBS.

Raising the cutoff on the commercial screen scores from the lowest 15% of the scores to the lowest 25% of the scores did not raise the percent of correct identifications at the end of the two year period. In other words, widening the net at the end of kindergarten yielded a lower percent of correct identifications.

Table 1

Effectiveness of the Kindergarten Testing Program
in Correctly Identifying Children
as Having Potential Reading Problems
(Multiple Pre-Test Indicators)

Pre-test Indicators	Number of Children Identified Spring '86	Post-Test Measures	Number of Children with Actual Deficits Spring '88	Percent of Correct Identification
Kindergarten Teacher Rating & Screens (15%)	40	Year Three Teacher Rating and CTBS Rank	18	45.0%
Kindergarten Teacher Rating & Screens (15%)	40	Year Three Teacher Rating Only	18	45.0%
Kindergarten Teacher Rating & Screens (15%)	40	CTBS Rank Only	37	92.5%
Kindergarten Teacher Rating & Screens (25%)	53	Year Three Teacher Rating and CTBS Rank	23	43.4%
Kindergarten Teacher Rating & Screens (25%)	53	Year Three Teacher Rating Only	23	43.4%
Kindergarten Teacher Rating & Screens (25%)	53	CTBS Rank Only	44	83.0%

Findings on Single Indicators of the Pilot Project's Kindergarten Testing Program. As displayed in Table 2, no single indicator used in the Kindergarten Testing Program met the 75% criterion of correct identifications.

All single indicators yielded a higher percent of correct identifications when the CTBS percentile rank was used alone as evidence of reading achievement deficits.

Kindergarten teacher judgment approached the 75% criterion when CTBS percentile rank was used alone.

The commercial screens using either cutoff point (lowest 15% of the scores or lowest 25% of the scores) did not come close to the 75% criterion when using either of the post-test measures. Kindergarten teachers identified fewer children as having potential reading problems than did commercial screens. Overall, kindergarten teacher judgment was a better indicator of potential reading problems, as compared to the commercial screens, no matter which cutoff point was used (lowest 15% of the scores or lowest 25% of the scores).

Raising the cutoff on the commercial screen score from the lowest 15% of the scores to the lowest 25% of the scores did not raise the percent of correct identifications at the end of the two-year period. In other words, widening the net at the end of kindergarten yielded a lower percent of correct identifications.

Table 2

Effectiveness of the Kindergarten Testing Program
in Correctly Identifying Children
as Having Potential Reading Problems
(Single Pre-Test Indicators)

Pre-test Indicators	Number Children Identified Spring '86	Post-Test Measures	Number of Children with Actual Deficits Spring '88	Percent of Correct Identification
Kindergarten Teacher Rating	82	Year Three Teacher Rating	30	36.6%
Kindergarten Teacher Rating	82	CTBS Rank	60	73.2%
Screens (15%)	120	Year Three Teacher Rating	38	31.7%
Screens (15%)	120	CTBS Rank	81	67.5%
Screens (25%)	220	Year Three Teacher Rating	52	23.6%
Screens (25%)	220	CTBS Rank	116	52.7%

Discussion

The findings on the accuracy of identification by the screening measures show that the concerns expressed by parents and education professionals about misidentification, as described in Chapter I, are well-founded. As can be found in Appendix D, the pilot project's kindergarten testing program made both correct identifications and incorrect identifications. The incorrect identifications made by the testing program were of two kinds: some children were incorrectly identified as having potential reading problems, and actually had no indicated difficulties two years later. Other children were incorrectly identified as not having potential reading problems, and actually had such difficulties two years later. This may be due to the developmental diversity of children at the kindergarten age span; with their differing rates of growth, development, and maturation; and to the resulting unreliability of children's performance at that age level.

Summary

Five major findings emerged from the analyses of the data. First, a small number of kindergarten children was identified by both of the multiple indicators of the pilot project's kindergarten testing program. The small number is reflective of the relatively small number of children identified by their kindergarten teachers as having potential reading problems, as compared with the number of children identified by the commercial screening instruments.

Second, the pilot project's kindergarten testing program was partially effective in having correctly identified children in kindergarten as having potential reading problems. The multiple indicators of the kindergarten testing program (kindergarten teacher judgment and commercial screening instrument) met the criterion of 75% correct identifications only when the children's scores on a standardized test of reading achievement was used as the post-test measure.

The kindergarten testing program did not meet the criterion of 75% correct identifications when teacher judgment of the children's reading achievement was used as the post-test measure.

Third, no single indicator of the kindergarten testing program met the criterion of 75% correct identifications, regardless of the post-test measure used as evidence of actual reading achievement deficit, teacher's judgment, or children's scores on the standardized test of reading achievement.

Fourth, of the single indicators of potential reading problems, the kindergarten teacher judgment instrument came closest to meeting the criterion of 75% correct identifications. The teacher judgment instrument approached the criterion only when the standardized test of reading achievement was used as the post-test measure.

Fifth, raising the cutoff point on the commercial screening instrument indicator of potential reading problems lowered the percentage of correct identifications. In other words, widening the net in kindergarten resulted in a lower percentage of correct identifications by the pilot project's multiple indicator kindergarten testing program.

The next chapter presents the Department's conclusion on the feasibility of implementing the kindergarten testing program statewide at the end of the pilot project.

Chapter IV.
Feasibility of Implementing the Kindergarten Testing Program Statewide

The chapter presents the Department's conclusions on the feasibility of implementing the Kindergarten Testing Program statewide. The Department adopted three criteria for determining feasibility for statewide implementation of the testing program at the end of the pilot project: effectiveness, statewide utility, and cost. The Department's conclusions on feasibility apply only to the kindergarten testing program developed and implemented by the pilot project and are not intended to apply to testing programs and screening procedures in current use. The Department's conclusion on each of the criteria is presented in separate sections, followed by a summary and recommendation.

Effectiveness. As stated in the previous chapter, the pilot project's kindergarten testing program was partially effective in correctly identifying children with potential reading problems at an early period. The multiple indicators of the kindergarten testing program (kindergarten teacher judgment and commercial screening instrument) met the criterion of 75% correct identifications only when the children's scores on a standardized test of reading achievement were used as the post-test measure.

The multiple indicators of the kindergarten testing program did not meet the criterion of 75% correct identifications when teacher judgment of the children's reading achievement was used as the post-test measure.

No single indicator of the kindergarten testing program met the criterion of 75% correct identifications, regardless of the post-test measure used as evidence of actual reading achievement deficit: the teacher's judgment or the children's scores on the standardized test of reading achievement.

Of the single indicators of potential reading problems, the kindergarten teacher judgment instrument came closest to meeting the criterion of 75% correct identifications. The teacher judgment instrument approached the criterion only when the standardized test of reading achievement was used as the post-test measure.

Statewide Utility. The commercially published screening tests were not designed for use with the rapidly changing demographic patterns of children enrolled in California public schools. In 1987 California had over one million language minority students; that is, one out of four students. The future population projections show an increasingly diverse linguistic community throughout California.

Table 3

Estimated Costs of Implementing
the Pilot Project's Kindergarten Testing Program Statewide

Field Activity	Per-pupil cost in pilot project	Estimated cost for statewide implementation
Orientation to testing and time for teachers to rate their pupils	$ 0.81	$ 317,610.72
Purchase of commercial testing materials	$ 1.67	$ 654,827.04
Training test examiners	$ 1.71	$ 670,511.52
Administration and scoring of tests	$ 18.06	$ 7,081,542.72
Travel for examiners and monitor	$ 5.39	$ 2,113,483.68
Duplication of teacher judgment form	$ 0.01	$ 3,921.12
Total Estimated Costs	$ 27.65	$10,341,896.80

Cost. The costs for statewide implementation of the kindergarten testing program are estimated at $10,841,897. This estimate is based on the per-pupil costs of the field activities of the pilot project in implementing the testing program for 1,187 pupils in spring, 1986. In Table 3 those per-pupil costs have been multiplied by 392,112, the number of pupils in kindergarten in 1987, the most recent data available.

In addition to the costs incurred in the pilot project, there would be costs at local and state levels for practical implementation of the kindergarten testing program. At the local level, there would be unknown costs to school districts for staff time to develop local cutoff points, obtain parent permission to test children, select examiners, interpret children's scores, writing individual reports on each child's results, and informing each child's parents by mail, personal conference, or telephone of the child's performance. Administrative costs would be incurred at the district level for establishment of district guidelines, assistance to schools in the implementation, and reporting to school boards and the Department on the costs and the results.

Administrative costs of an unknown amount would be incurred at the state level. The Department would need to establish statewide guidelines or regulation, or both; provide assistance to districts in start-up; monitor districts and schools for compliance; calculate the amounts of any appropriations requests necessary to implement a new state mandate; calculate the amount due to each district; apportion state monies; review district results; and audit district fiscal reports.

Summary and Recommendation. In light of the limited effectiveness of the pilot project's kindergarten testing program, the growing numbers of limited-English proficient pupils who would be excluded from this testing program, and the projected per-pupil costs of statewide implementation of the testing program, the Department concludes that statewide implementation is not feasible.

In view of the relative greater effectiveness of the kindergarten teacher judgement indicator of potential reading problems and the relative lower cost for administering the kindergarten teacher judgement procedure, the Department recommends further developmental work to increase the effectiveness of kindergarten teacher judgment as one means of correctly identifying children with potential reading problems. Such developmental work should take in account the wide diversity of children's developmental patterns and the linguistic and cultural diversity of children in California's public schools.

Appendix A
Chapter 1376, Statutes 1985 (Assembly Bill 972)

Article 13. Early Diagnosis of Learning Disabilities

49580. The State Department of Education shall develop a testing program to be utilized at the kindergarten grade level to determine which pupils have a potential for developing learning disability problems. The testing procedure shall include an overall screening test for learning disabilities and testing for dyslexia. To the extent feasible, the department shall use existing tests and screening instruments in developing the early diagnosis of the learning disabilities testing program. In developing the program, the department shall consult with experts in the areas of learning and reading difficulties, including, but not limited to, neurologists, psychologists, persons working in these areas in postsecondary educational institutions, teachers, school nurses, education consultants, school psychologists, and other persons with appropriate knowledge and experience in the detection and treatment of learning problems and reading difficulties in early grades.

49581. The State Department of Education shall develop and implement a pilot project to determine the effectiveness and feasibility of implementing the early diagnosis of learning disabilities testing program developed pursuant to Section 49580. The pilot project shall administer the early diagnosis testing program to kindergarten aged pupils in order to identify pupils with the potential to develop learning disability problems. Pupils who are identified as having potential learning disability problems shall be referred to existing programs and services which are available to provide assistance.

49582. On or before January 1, 1986, the State Department of Education shall prescribe guidelines for the early diagnosis of the learning disabilities testing program and pilot project. The guidelines shall include, but need not be limited to, all of the following:

(a) A definition of "pupils with the potential to develop learning disability problems," as used in this article.

(b) The methods and criteria for selecting one or more sites for the establishment of the pilot project.

(c) The number of sites to be selected for purposes of establishing the pilot project.

(d) Criteria for judging the results and effectiveness of the early diagnosis testing program, as well as criteria for determining the feasibility for implementing the program at the conclusion of the pilot project.

49583. On or before January 1, 1989, the State Department of Education shall submit a report to both educational policy committees of the Legislature regarding the results of the early diagnosis of the learning disabilities pilot project. The report shall include, but need not be limited to, an assessment of the degree to which the early diagnosis of learning disabilities in pupils participating in the pilot program resulted in a reduction of the need for later remedial education for those pupils, and the projected cost effectiveness of this early diagnosis.

SEC. 2. The sum of one hundred fifty thousand dollars ($150,000) is hereby appropriated from the General Fund to the State Department of Education for allocation in accordance with the following schedule:

(a) For purposes of developing a testing program for the early diagnosis of learning disabilities pursuant to Article 13 (commencing with Section 49580) of Chapter 9 of Part 27 of the Education Code in the 1985–86 fiscal year	$ 50,000
(b) For purposes of validating the testing program described in subdivision (a) in the 1986–87 and 1987–88 fiscal years, with fifty thousand dollars ($50,000) to be allocated to the department in each fiscal year	$100,000

SEC. 3. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting the necessity are:

In order to require the State Department of Education to develop a testing program for the early diagnosis of learning disabilities at the earliest possible time, it is necessary that this act take effect immediately.

BEST COPY AVAILABLE

Appendix B

List of Field Experts

Listed in the paragraph below in alphabetical order are the field experts with their primary positions and institutions, as reported in the summer of 1988:

Beverly Bigler, M.S., Ed.D., School Nurse/Pediatric Nurse Practitioner-Certified, Alhambra School District; Jeffrey L. Black, M.D., Assistant Clinical Professor, Department of Pediatrics, University of California, San Diego; Nicholas A. Bond Jr., Ph.D., Professor, Department of Psychology, California State University, Sacramento; Elmer C. Cameron, M.A., Associate Superintendent, Supplementary Education Services, Escondido Union School District; Christopher H. Chase, Ph.D., Research Associate, Language Research Center, Children's Hospital, San Diego; Boyd A. Johnson, M.A., Director, Diagnostic Educational Success Center, Redlands; Barbara K. Keogh, Ph.D., Professor of Educational Psychology, Graduate School of Education, University of California at Los Angeles; Delmont C. Morrison, Ph.D., Clinical Professor, Department of Psychiatry, Langley Porter Institute, University of California, San Francisco; Jean C. Ramage, Ph.D., Professor, Department of Counselor Education, Co-director of School Psychology Program, San Diego State University; Nancy L. Royal, Ed.D., Director, Prentice Day School, Costa Mesa; Paul Satz, Ph.D., Professor of Medical Psychology and Chief, Neuropsychology Program, The Neuropsychiatric Institute and Hospital, University of California, Los Angeles; Mary L. Scholl, M.D., Associate Clinical Professor of Neuroscience, University of California, San Diego; Paul Schultz, M.D., Co-Director, Neurology, Children's Hospital, San Diego; Lillian Stillwell, M.A., Director, Pupil Personnel Services, Retired, Auburn Elementary School District; Paula Tallal, Ph.D. Co-director, Center for Molecular and Behavioral Neuroscience, Rutgers University; Barbara F. Thomas, M.A., Director, Special Education Local Plan Area, Fresno County Office of Education; Claude A. Valenti, O.D., FCOVD, Director, Optometric Vision Development Center, La Jolla; Mary Ziegler, B.S., Project Coordinator, Language Research Center, Children's Hospital Research Center, San Diego.

The following members of the group of field experts comprised the technical subcommittee:
Christopher H Chase, Ph.D.; Barbara K. Keogh, Ph.D.; Delmont C. Morrison, Ph.D.; Paul Satz, Ph.D.; Mary Ziegler, B.S.

Appendix C

List of Selected References

California State Department of Education, "Year Three Teacher Evaluation Form," 1988, unpublished.

Chapter 1376, Statutes of 1985 (Assembly Bill 972)

Enrollment Data: California Elementary and Secondary Public Schools 1987-88. The California Basic Educational Data System. Sacramento: California State Department of Education, 1988.

Glass, Gene V. "Standards and Criteria," Journal of Educational Measurement, Vol. 15, No. 4 (Winter 1978): 237-61.

Goodwin, William L., and Laura A. Driscoll. Handbook for Measurement and Evaluation in Early Childhood Education. San Francisco, California: Jossey-Bass Publishers, 1980.

Here They Come: Ready or Not! Report of the School Readiness Task Force. Prepared by the Public and Governmental Policy Branch. Sacramento: California State Department of Education, 1988.

Kelly, Thomas F. "Reflections on High Expectations: There Is No Such Thing as an Overachiever." Article transmitted through 1988 personal correspondence, Dix Hills, New York: Suffolk III BOCES., n.d.

Keogh, B. K., and M. W. Sbordone. "Early Identification of High Risk and High Potential Kindergarten Children." A technical report prepared under contract between the California State Department of Education and the University of California, Los Angeles. December, 1974, p. 63.

Learning Disabilities: A Report To The U.S. Congress. Prepared by the Interagency Committee on Learning Disabilities. Washington D.C.: The Department of Health and Human Services, 1987.

Lichtenstein, Robert, and Harry Ireton. Preschool Screening: Identifying Young Children with Developmental and Educational Problems. Orlando, Florida: Gene and Stratton, Inc., 1984.

Martin, Anne. "Screening, Early Intervention, and Remediation: Obscuring Children's Potential", Harvard Educational Review, Vol. 58, No. 4, Nov. 1988, pp. 488-501.

Meehl, Paul E., and Albert Rosen. "Antecedent Probability and the Efficiency of Psychometric Signs, Patterns, or Cutting Scores," Psychological Bulletin, Vol. 52, No. 3 (1955): 194-216.

Meehl, Paul E. Clinical vs. Statistical Prediction: A Theoretical Analysis and Review of the Evidence. Minneapolis: University of Minnesota Press, 1956.

Satz, Paul, and Jack Fletcher. Manual for the Florida Kindergarten Screening Battery. Odessa, Florida: Psychological Assessment Resources, Inc., 1982.

Screening of Public School Children. Legislative Commission on Expenditure Review Program Audit. Albany: The Legislature of the State of New York, 1985.

Silver, Archie, and Rosa Hagin. Search: A Scanning Instrument for the Identification of Potential Learning Disability. 2d ed.,enl. New York: Walker Publishing Company, 1981.

Slingerland, Beth H. Pre Reading Screening Procedures: To Identify First Grade Academic Needs. Cambridge, Massachusetts: Educators Publishing Service, Inc., 1977.

Appendix D
Selected Descriptive Statistics

Year One (1986)
Selected Statistics
of Study Participants in Kindergarten
by Pre-Test Screening Instrument

	Screening Instrument			
	FLORIDA	SEARCH	SLINGERLAND	KINDERGARTEN TEACHER EVALUATION
Number of children screened	395	405	380	1180
Lowest Score	-3.77	2.00	0.00	1.00
Highest Score	3.89	9.00	130.00	5.00
Mean Score	0.53	7.65	96.71	3.26
Standard Deviation	1.06	1.39	18.75	1.28

Selected Statistics
of Study Participants
Remaining in Year Three (1988)
by Pre-Test Screening Instrument

	Screening Instrument			
	FLORIDA	SEARCH	SLINGERLAND	KINDERGARTEN TEACHER EVALUATION
Number of children screened	303	324	296	923
Lowest Score	-3.77	2.00	0.00	1.00
Highest Score	3.89	9.00	130.00	5.00
Mean Score	0.63	7.75	98.06	3.36
Standard Deviation	1.04	1.32	17.06	1.25

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 15%]
and Combined Post-test Measures)

Spring 1986 Number of Children Identified as Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 15% 40 children	18 children Actual Reading Achievement Deficits 22 children No Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Not Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 15%]
and Combined Post-test Measures)

Spring 1986 Number of Children Identified as Not Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 15% 883 children	732 children No Actual Reading Achievement Deficits 151 children Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 25%]
and Combined Post-test Measures)

Spring 1986 Number of Children Identified as Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 25% 53 children	23 children Actual Reading Achievement Deficits 30 children No Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Not Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 25%]
and Combined Post-test Measures)

Spring 1986 Number of Children Identified as Not Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 25% 870 children	720 children No Actual Reading Achievement Deficits 150 children Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 15%]
and CTBS Post-test Measure)

Spring 1986 Number of Children Identified as Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 15% 40 children	37 children Actual Reading Achievement Deficits 3 children No Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Not Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 15%]
and CTBS Post-test Measure)

Spring 1986 Number of Children Identified as Not Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 15% 883 children	718 children No Actual Reading Achievement Deficits 165 children Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 25%]
and CTBS Post-test Measure)

Spring 1986 Number of Children Identified as Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 25% 53 children	44 children Actual Reading Achievement Deficits 9 children No Actual Reading Achievement Deficits

Effectiveness of the Kindergarten Testing Program
in Identifying Children as Not Having
Potential Reading Problems
(Multiple Pre-test Indicators [Screens 25%]
and CTBS Post-test Measure)

Spring 1986 Number of Children Identified as Not Having Potential Reading Problems	Spring 1988 Reading Achievement Status of Children
Teacher Judgement & Screens at 25% 870 children	712 children No Actual Reading Achievement Deficits 158 children Actual Reading Achievement Deficits

Appendix D (cont.)

Search Screen (25%)
Versus
CTBS Reading Achievement (20th %-ile)
n=324

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	49	42
No Potential Reading Problems	20	213
Total	69	255

Slingerland Screen (15%)
Versus
CTBS Reading Achievement (20th %-ile)
n=296

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	26	10
No Potential Reading Problems	29	231
Total	55	241

Slingerland Screen (25%)
Versus
CTBS Reading Achievement (20th %-ile)

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	33	32
No Potential Reading Problems	22	209
Total	55	241

Appendix D (cont.)

Florida Screen (15%)
Versus
CTBS Reading Achievement (20th %-ile)
n=303

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	23	14
No Potential Reading Problems	55	211
Total	78	225

Florida Screen (25%)
Versus
CTBS Reading Achievement (20th %-ile)
n=303

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	34	30
No Potential Reading Problems	44	195
Total	78	225

Search Screen (15%)
Versus
CTBS Reading Achievement (20th %-ile)
n=324

Screen Indicator	CTBS < 21st %-ile Indicator	CTBS > 20th %-ile Indicator
Potential Reading Problems	32	15
No Potential Reading Problems	37	240
Total	69	255